UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,784	03/03/2004	Naoya Murakami	065905-0313	3216

22428 7590 12/10/2007

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
RILEY, MARCUS T	
ART UNIT	**PAPER NUMBER**
2625	

MAIL DATE	DELIVERY MODE
12/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/790,784	MURAKAMI, NAOYA	
	Examiner	Art Unit	
	Marcus T. Riley	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *03 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *1-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *attached*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is responsive to the applicant's remarks received on September 25, 2007. Claims 1-10 have been canceled. New claims 11-17 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-10 have been canceled and are withdrawn from consideration. New claims 11-17, filed on September 25, 2007 have been fully considered but they are not persuasive.

A: Applicant's Remarks

"Applicant respectfully submits that each of the pending claims is patentably distinguishable over the cited references as required by § § 102 or 103. Applicant further submits that none of the cited references, whether considered alone or in combination, discloses Applicant's claimed image reading method including *storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off.* Each of the independent claims requires this patentable feature or similar language. By contrast, the cited references fail to disclose, teach or suggest this claimed feature."

A: Examiners Answer

Examiner submits that each of the pending claims are not patentably distinguishable over the cited references as required by 35 U.S.C. 102 or 35 U.S.C. 103. Examiner further submits that the cited references, Sakai et al. (US 5,784,180, hereinafter Sakai 180), Ikeda (US

5,550,638, hereinafter Ikeda '638) and Kanno et al. (US 6,434,266 B1 hereinafter, Kanno '266), whether considered alone or in combination, discloses Applicant's claimed image reading method including *storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off* (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* Sakai '180 at c olumn 1, lines 24-28). Thus, the cited references discloses, teaches or suggests this claimed feature.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 11, 16 & 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai '180 in combination with Ikeda '638.

Regarding claim 11; Sakai 180 discloses an image reading method, comprising: applying a light to a white reference plate from a light source when reading a first sheet of documents in a monochromatic reading mode reading monochromatic images from plural numbers of documents successively and receiving reflecting light from the white reference plate

by the BK line sensor to output a digital monochromatic signal (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors."* column 9, lines 1-9); storing the digital monochromatic signal outputted from the BK line sensor as a first with reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); turning off the light to output a digital monochromatic signal from the BK line sensor (*"The control unit 13 performs the entire control of the color reader 1, i.e., performs control of a stepping motor driving circuit 15 for pulse-driving a stepping motor 14 for moving the scanning unit 11 through a signal line 503, performs ON/OFF control and light amount control of the halogen exposure lamp 10 by an exposure lamp driver 21 through a signal line 504, and performs control of a digitizer 16 or a display unit through a signal line 505."* column 6 , lines 38-45); storing the digital monochromatic signal outputted from the BK line sensor when the light is turned off, as a

black reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); executing a shading correction of the monochromatic signal that is a first reflecting light received by the BK line sensor from the first sheet of the documents and output by the BK line sensor based on the first white reference data for a monochromatic signal and the black reference data for a monochromatic signal (*"An analog circuit 3025 amplifies analog outputs from the CCD line sensors 3061, 3062, and 3063 and converts these analog signals into digital signals. A generator 3026 for signal for adjustment generates a reference signal for the analog circuit 3025. A dark correction circuit 3027 performs dark correction of R, G, and B digital image signals from the analog circuit 3025. A shading correction circuit 3028 performs shading correction of an output signal from the dark correction circuit 3027. A pixel shift correction circuit 3029 corrects a main-scan pixel shift of an output signal from the shading correction circuit 3028."* column 21, lines 16-26); applying the light to the white reference plate from the light source when reading a second sheet of the documents in the monochromatic reading mode and receiving the reflecting light from the white reference plate by the BK line sensor to output a digital monochromatic signal (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in*

response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors." column 9, lines 1-9); storing the digital monochromatic signal outputted from the BK line sensor as a second white reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); applying a light to the white reference plate from the light source when reading a first sheet of documents in a color reading mode reading color images from plural numbers of documents successively and receiving the reflecting light from the white reference plate by the R, G and B line sensors to output digital color signals (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors."* column 9, lines 1-9); storing

the digital color signals outputted from the R, G and B line sensors as a first white reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); storing the digital color signals outputted from the R, G and B line sensors when the light is turned off, as black reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); executing a shading correction of the color signal that is a first reflecting light received by the R, G and B line sensors from the first sheet of the documents and output by the R, G and B line sensors based on the first white reference data for color signal and the black reference data for color signal (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40); applying the light to the white reference plate from the light source when reading a second sheet of the documents in the color reading mode and receiving the reflecting light from the white reference plate by the R, G and B line sensors to output digital color signals (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects*

one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors." column 9, lines 1-9); storing the digital color signals outputted from the R, G and B line sensors as a second white reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); and executing a shading correction of the color signal that is the second reflecting light received by the R, G and B line sensors from the second sheet of the documents and output by the R, G and B line sensors based on the second white reference data for color signal only (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40).

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors and turning off the light to output digital color signals from the R, G and B line sensors.

Ikeda '638 discloses preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m)."* column 7, lines 62-66). See also

(*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502."* column 38, lines 40-46); turning off the light to output digital color signals from the R, G and B line sensors (*"The memory corresponds to the 100-dpi memory L in the entire circuit shown in FIG. 2, and is used as a means for generating switching signals for determining an ON (executing) or OFF (not executing) state of various image process and edit modes, such as the above-mentioned color conversion, image trimming (non-rectangular trimming), image painting (non-rectangular painting), and the like for shapes illustrated in, e.g., FIG. 37E. More specifically,in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502."* column 38, lines 32-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit."* Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a

four-line CCD sensor comprising a BK line sensor and R, G and B line sensors and turning off the light to output digital color signals from the R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 11.

Claim 11 is also rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai '180 and Ikeda '638 as applied to claim11 above, and further in view of Kanno '266.

Sakai '180 and Ikeda '638 as modified does not expressly disclose executing a shading correction of the monochromatic signal that is a second reflecting light received by the BK line sensor from the second sheet of the documents and output by the BK line sensor based on the second white reference data for a monochromatic signal only.

Kanno '266 discloses executing a shading correction of the monochromatic signal that is a second reflecting light received by the BK line sensor from the second sheet of the documents and output by the BK line sensor based on the second white reference data for a monochromatic signal only (*"A shading correction circuit 1014 corrects an output non-uniformity with respect to each color of the line sensor 100 and the inclination of the quantity of light from a light source."* column 8, lines 32-35).

Sakai '180 and Ikeda '638 are combinable with Kanno '266 because they are from same field of endeavor of image processing apparatuses ("The present invention relates to an apparatus and a method for processing color images and, more particularly, to a color image processing apparatus..." Ikeda '638 at column 1, lines 8-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 and Ikeda '638 by adding executing a shading correction of the monochromatic signal that is a second reflecting light received by the BK line sensor from the second sheet of the documents and output by the BK line sensor based on the second white reference data for a monochromatic signal only as taught by Kanno '266.

The motivation for doing so would have been because it advantageous to provide a color image processing apparatus and a color image processing method which makes it possible to suitably convert a color (*"...an object of the present invention is to provide a color image processing apparatus and a color image processing method which make it possible to suitably convert a color..."* Kanno '266 at column 3, lines 31-34).

Therefore, it would have been obvious to combine Sakai '180 and Ikeda '638 with Kanno '266 to obtain the invention as specified in claim 11.

Regarding claim 16; Sakai '180 discloses an image reading method comprising the steps: Sakai '180 storing digital color signals that are reflected light of light applied from a light source to a white reference plate and received and output by the R, G and B line sensors as white reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color*

images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked." column 1, lines 24-28); storing a digital monochromatic signal that is reflected light of the light applied from the light source to the white reference plate and received and output by the BK line sensor as white reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); storing the digital color signals that are output from the R, G and B line sensors as black reference data for color signals with the light source is turned off (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); storing the digital monochromatic signal that is output from the BK line sensor as black reference data for a monochromatic signal with the light source is turned off (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); judging whether plural number of documents are monochromatic documents or color documents by sequentially scanning the documents (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and*

(1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors. The select signals C0, C1, and C2 are output by the CPU 22 in accordance with an image forming sequence of the color printer 2." column 9, lines 1-11); executing a shading correction of color signals output from the R, G and B line sensors by receiving the reflecting light from the document by the R, G and B line sensors based on the white reference data for color signals and the black reference data for color signals when a first sheet of the document is judged to be a color document (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40).

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors.

Ikeda '638discloses preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m)."* column 7, lines 62-66). and see also (*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502."* column 38, lines 40-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit."* Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 16.

Claim 16 is also rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai '180 and Ikeda '638 as applied to claim 16 above, and further in view of Kanno '266.

Sakai '180 and Ikeda '638 as modified does not expressly disclose executing a shading correction of a monochromatic signal output from the BK line sensor by receiving the light from the document by the BK line sensor based on the monochromatic white reference data for a monochromatic signal and the black reference data for a monochromatic signal when the first sheet of the document is judged to be a monochromatic document.

Kanno '266 and executing a shading correction of a monochromatic signal output from the BK line sensor by receiving the light from the document by the BK line sensor based on the monochromatic white reference data for a monochromatic signal and the black reference data for a monochromatic signal when the first sheet of the document is judged to be a monochromatic document (*"A shading correction circuit 1014 corrects an output non-uniformity with respect to each color of the line sensor 100 and the inclination of the quantity of light from a light source."* column 8, lines 32-35).

Sakai '180 and Ikeda '638 are combinable with Kanno '266 because they are from same field of endeavor of image processing apparatuses ("The present invention relates to an apparatus and a method for processing color images and, more particularly, to a color image processing apparatus..." Ikeda '638 at column 1, lines 8-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 and Ikeda '638 by adding executing a shading correction of a monochromatic signal output from the BK line sensor by receiving the light from the document by the BK line sensor based on the monochromatic white reference data for a monochromatic signal and the black reference data for a monochromatic signal when the first sheet of the document is judged to be a monochromatic document as taught by Kanno '266.

The motivation for doing so would have been because it advantageous to provide a color image processing apparatus and a color image processing method which makes it possible to suitably convert a color (*"...an object of the present invention is to provide a color image*

processing apparatus and a color image processing method which make it possible to suitably convert a color..." Kanno '266 at column 3, lines 31-34).

Therefore, it would have been obvious to combine Sakai '180 and Ikeda '638 with Kanno '266 to obtain the invention as specified in claim 16.

Regarding claim 17; Sakai '180 discloses after completing the shading correction for the monochromatic image signal based on the white reference data for a monochromatic signal and the black reference data for a monochromatic signal, storing a digital monochromatic signal that is the reflecting light from the white reference plate of the light applied to the white reference plate from the light source received and output by the BK line sensor as white reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); and storing a digital monochromatic signal output from the BK line sensor with the light source turned off as monochromatic black reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28).

5. **Claims 12 -15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai '180 in combination with Ikeda '638.

Regarding claim 12; Sakai '180 discloses an image reading method, comprising: applying a light to a white reference plate from a light source and receiving reflecting light from the white reference plate by the BK line sensor and R, G and B line sensors to output a digital monochromatic signal and digital color signals (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors."* column 9, lines 1-9); storing the digital monochromatic signal and the digital color signals as white reference data (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); turning off the light to output a digital monochromatic signal from the BK line sensor and color signals from the R, G and B line sensors (*"The control unit 13 performs the entire control of the color reader 1, i.e., performs control of a stepping motor driving circuit 15 for pulse-driving a stepping motor 14 for moving the scanning unit 11 through a signal line 503, performs ON/OFF control and light amount control of the halogen exposure lamp 10 by an*

exposure lamp driver 21 through a signal line 504, and performs control of a digitizer 16 or a display unit through a signal line 505." column , lines); storing the digital monochromatic signal outputted from the BK line sensor and the color signals from the R, G and B line sensors when the light is turned off, as black reference data (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); judging whether plural number of documents are monochromatic documents or color documents by sequentially scanning the documents (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors. The select signals C0, C1, and C2 are output by the CPU 22 in accordance with an image forming sequence of the color printer 2."* column 9, lines 1-11); executing a shading correction of the monochromatic image signal that is the reflecting light from the document received and output by the BK line sensor based on the white reference data and the black reference data when a first sheet of the document is judged to be a monochromatic document (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40); and executing a shading correction of the color signal that is the reflecting light received and output

by the R, G and B line sensors based on the white reference data only when the first sheet of the document is judged to be a color document (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029.*" column 22, lines 36-40).

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors.

Ikeda '638 discloses preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m).*" column 7, lines 62-66). See also (*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502.*" column 38, lines 40-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit.*" Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a

four-line CCD sensor comprising a BK line sensor and R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 12.

6. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai '180 and Ikeda '638 as applied to claim12 above, and further in view of Kanno '266.

Regarding claim 13; Sakai '180 discloses executing a shading correction of the color signals that are the reflecting light from the document received and output from the R, G and B line sensors when the second sheet of the document is judged to be a color document, based on the white reference data only (*The R, G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40).

Sakai '180 and Ikeda '638 as modified does not expressly disclose executing a shading correction of the monochromatic signal that is the reflecting light from the document received by

and output from the BK line sensor based on the white reference data and the black reference data when a second sheet of the document is judged to be a monochromatic document.

Kanno '266 discloses executing a shading correction of the monochromatic signal that is the reflecting light from the document received by and output from the BK line sensor based on the white reference data and the black reference data when a second sheet of the document is judged to be a monochromatic document (*"A shading correction circuit 1014 corrects an output non-uniformity with respect to each color of the line sensor 100 and the inclination of the quantity of light from a light source."* column 8, lines 32-35).

Sakai '180 and Ikeda '638 are combinable with Kanno '266 because they are from same field of endeavor of image processing apparatuses ("The present invention relates to an apparatus and a method for processing color images and, more particularly, to a color image processing apparatus..." Ikeda '638 at column 1, lines 8-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 and Ikeda '638 by adding executing a shading correction of the monochromatic signal that is the reflecting light from the document received by and output from the BK line sensor based on the white reference data and the black reference data when a second sheet of the document is judged to be a monochromatic document as taught by Kanno '266.

The motivation for doing so would have been because it advantageous to provide a color image processing apparatus and a color image processing method which makes it possible to suitably convert a color (*"...an object of the present invention is to provide a color image*

processing apparatus and a color image processing method which make it possible to suitably convert a color.." Kanno '266 at column 3, lines 31-34).

Therefore, it would have been obvious to combine Sakai '180 and Ikeda '638 with Kanno '266 to obtain the invention as specified in claim 12.

Regarding claim 14; Sakai '180 discloses an image reading method, comprising: storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off when a first copy is preferential among the first copy being preferential and a ready time being preferential, at the time when power is turned ON (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28);

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors.

Ikeda '638 preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m)."* column 7, lines 62-66). See also (*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G,*

the color balance circuit P, and the external apparatus image synthesizing circuit 502." column 38, lines 40-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit."* Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 12.

Regarding claim 15; Sakai '180 discloses storing a digital monochromatic signal and digital color signals that are reflecting light of the light applied to a white reference plate from the light source and then received and output by the BK line sensor and the R, G and B line sensors as a white reference data when the first copy is preferential at the time when power is turned ON (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when*

the monitor display is connected to the digital color copying machine, the stored images can be checked." column 1, lines 24-28).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus T. Riley whose telephone number is 571-270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler Lamb can be reached on 571-272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marcus T. Riley
Assistant Examiner
Art Unit 2625

TWYLER LAMB HASKINS
SUPERVISORY PATENT EXAMINER